

CLAIMS:

1. A bearing element comprising:
a plurality of layers, at least one of said layers formed from a plurality of materials comprising at least one of Teflon fibers, glass fibers, carbon fibers, and combinations thereof; and
5 at least one polyimide resin impregnating said layers.
2. A bearing element in accordance with Claim 1 wherein said glass fibers are coated with a sizing material comprising at least one of an epoxy coating, a silane coating, and combinations thereof.
- 10 3. A bearing element in accordance with Claim 2 wherein each said layer comprises a woven mat of said plurality of material fibers.
4. A bearing element in accordance with Claim 2 wherein each said layer comprises a braided mat of said plurality of material fibers.
5. A bearing element in accordance with Claim 2 wherein said
15 plurality of layers are plasma etched.
6. A bearing element in accordance with Claim 1 wherein said at least one polyimide resin further comprises Teflon powder.
7. A bearing element in accordance with Claim 1 further comprising a coating including a polyimide resin comprising at least one of a
20 Teflon powder, MoS₂ particles, and combinations thereof.

-10-

8. A bearing element in accordance with Claim 1 wherein said plurality of layers further comprises a first layer comprising a woven mat of Teflon fibers and glass fibers, a second layer comprising a woven mat of glass fibers, and a third layer comprising a woven mat of Teflon fibers and glass
5 fibers.

9. A bearing element in accordance with Claim 2 wherein said sizing material further comprises Teflon powder.

10. A bearing element in accordance with Claim 1 wherein said bearing element comprises at least one of a washer and a seal.

10 11. A method for manufacturing a bearing element comprising the steps of:
forming a plurality of layers from a combination of a first material and a second material;
forming the bearing element from the plurality of layers; and
15 impregnating the bearing element with a polyimide resin comprising Teflon.

12. A method in accordance with Claim 11 wherein the first material and the second material comprise at least one of Teflon fibers, glass fibers, carbon fibers, and combinations thereof.

20 13. A method in accordance with Claim 12 wherein said step of forming a plurality of layers further comprises the steps of:
forming a first layer comprising the first material;
forming a second layer comprising the second material; and
forming a third layer comprising the first material.

14. A method in accordance with Claim 13 wherein said step of forming the plurality of layers further comprises the steps of:

- 5 forming the first layer from a woven mat of the first material;
forming the second layer from a woven mat of the second material; and
forming the third layer from a woven mat of the first material.

15. A method in accordance with Claim 13 wherein said step of forming the plurality of layers further comprises the steps of:

- 10 forming the first layer from a braid of the first material;
forming the second layer from a braid of the second material; and
forming the third layer from a braid of the first material.

16. A method in accordance with Claim 11 further comprising the step of coating the bearing element with a polyimide resin comprising at least one of a Teflon powder, MoS₂ particles, and a combination thereof.

- 15 17. A method in accordance with Claim 13 wherein:
the first layer comprises Teflon fibers and glass fibers;
the second layer comprises glass fibers;
the third layer comprises Teflon fibers and glass fibers; and
the glass fibers are coated with an epoxy sizing.

18. A method in accordance with Claim 17 wherein carbon fibers are substituted for the glass fibers.

19. A method in accordance with Claim 17 wherein quartz fibers are substituted for the glass fibers.

-12-

20. A method in accordance with Claim 17 wherein a silane sizing is substituted for the epoxy sizing.